







EQUOIA & KINGS CANYON NATIONAL PARKS

JOIA NATIONAL FOREST / GIANT SEQUOIA NATIONAL MONUMENT

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Changing winter in a changing world?

D uring a winter visit to these parks you may find yourself facing the cold season in all its unfettered power ... then again, you may not. The nature of winter in our mountain range seems to be

changing.

The Sierra Nevada has long been famous for its white winters and heavy snowpack in the high mountains. Snow depths of 10 to 20 feet on the ground are common in historical records. We owe many of the things we find most special about the Sierra — its giant forests, multi-tudinous lakes and ample rivers — to this generous snowfall. The range's wintry character is even expressed in its name, bestowed upon it by early Spanish explorers, that means "snowy mountains."

Records suggest, however, that winter is losing some of its grip on the Sierra. In recent years, more precipitation at low and middle altitudes has been falling as rain rather than as snow. At the same time, high-altitude snowpack is melting earlier, with the result that peak stream runoff is coming sooner in the spring. The glaciers of Sequoia and Kings Canyon National Parks are shrinking in their extent and volume.

The apparent root cause behind these and other related phenomena is that the measured climate of the range is warming significantly.

The implications of this for the natural systems of the parks are enormous. In a mountain range like the Sierra many plants and animals occupy relatively narrow altitudinal ranges with specific localized climates. Giant sequoias, for example, grow where they do because it is too dry at lower elevations and too cold up higher. Thousands of other organisms each have their own limits, too.



Some Sierran winters, such as 1952, have had almost overwhelming snowfall. How does this year compare? NPS Photo

Another aspect to consider is that the mountains of the southern Sierra are cool, moist "islands" extending south into the dry heat of California. This allows many plants and animals to exist at the very edge

of their ranges.

All of this means trouble if the climate changes. Plants like giant sequoias face real challenges if they find the climate where they are growing has shifted to become unhealthy for them. If stream waters warm, they may not support trout. If the snowpack at middle-altitudes disappears, then oaks and cedars — trees that tolerate warmer, drier conditions may move in to replace pine and fir trees. Many biologists worry that this is beginning to happen to the Sierra Nevada.

Some species can move more easily than others. Certainly, we can imagine

birds flying off to try to find new sites... but giant sequoia trees?!? The purpose of places like Sequoia and Kings Canyon is to preserve what we found here. But what if those special resources cannot be sustained in place? That is the question these parks will face as this new

In the meantime, take a moment while you are in the parks this winter to evaluate the seasonal conditions. Talk to a park ranger and find out what's been going on. Are recent temperatures average or on the mild side? Are weather stations at Grant Grove and Lodgepole receiving usual amounts of snow or are they falling short again this year? What are high-altitude snow surveys showing this winter?

These are questions every Californian ought to care about. The implications for our children and our parks are profound.

Wm. Tweed. Chief Park Naturalist